

Report of First Research Co-ordination Meeting (RCM) of the Co-ordination Research Programme “Use of non structural proteins of foot-and-mouth disease (FMD) virus to differentiate vaccinated and infected animals” (D3.20.20)

Introduction

The first RCM was held in Rio de Janeiro, 20 –24 March 2000. The meeting was attended by 14 of the fifteen Research Contract Holders (RCH) and all six of the Agreement Holders (AH's) as well as representatives of United Biomedical Incorporated.

The supply of three sets of reagents was made in the first year. These were:

1. Institute for Animal Health (IAH) Pirbright, England/Istituto Zooprofilattico Sperimentale, Brescia, Italy.
Indirect ELISA based on 3ABC antigen expressed in E.coli.
2. United Biomedical Inc., USA.
Indirect ELISA based on peptides (synthetic) 3A/3B.
3. Vet. Inst. for Virus Research, Lindholm, Denmark
Competition ELISA based on 3A 3B proteins expressed in baculovirus.

Reagents from (1) and (3) were facilitated through technical contracts, whereas (2) was made available free of charges including their shipment. This was a great effort by all involved. Although the supply of kits had taken longer than expected data on their use was produced by most of the RCH's and is reproduced under individual sections below. The data was obtained by examination of one or more of the assays supplied to test an assortment of sera selected from existing serum banks or using sera collected specifically. Other test data, particularly from the Liquid Phase Blocking ELISA (LPBE) were also presented. The exact planning of this phase was left in the hands of the RCH's.

Three main groups exist in the CRP which reflect various national developmental states with regard to control of FMD. These are groups from South America, S.E. Asia and Africa. The various needs of each group varied according to the phase of disease control in different countries and this theme emerged through the meeting.

The AH's represented: The reagent producers associated with research Institutes, (Brescia/Pirbright; Lindholm) and with Industry (United Biomedical Incorporated (UBI); Plum Island, USA (who discussed their developments and data on the UBI kits on use of non-structural proteins in ELISA; CSIRO, Geelong, Australia (who discussed the use of an ELISA using 3D expressed proteins); and PANAFTOSA, Rio de Janeiro, who discussed a developed and validated non-structural ELISA based on 3ABC baculovirus expressed proteins. The company UBI were represented and attended at their own expense. All gave presentations. A second technical officer (TO) from IAEA funded by the Department of Technical Co-operation (TC), also attended with the scientific secretary of the CRP and gave presentations on EQA, and laboratory accreditation developments under the OIE as well as initiating interest in a regional project approach in S. America to aid eradication of FMD by the year 2009.

Purpose of Meeting

A major purpose of the meeting was to determine focus more clearly on the aims of the CRP in the short and long term and to decide the best use of the resources and wide spectrum of the countries represented. This was aided by the results obtained so far.

The number of laboratories and various kits in different states of development pose both logistical and programmatic problems. Areas covered included validation of kits,

harmonization of kits, comparison of analytical sensitivities, diagnostic sensitivity, reference sera identification, reference panels, previous exercises in comparing assays, inclusion of the PANAFTOSA kits in future exercises, the supply of future reagents in terms of changes to protocols as well as costs was also noted. These areas will be discussed more fully.

Some more research-oriented lines were also proposed at selected laboratories. Individual problems of contract holders were discussed with the TO. All the RCH's gave presentations. A report was received from Dr. Zhao Qi-Zu (Lanzhou Veterinary Research Institute, Gansu, Peoples Republic of China) who was unable to attend. The reports are available from the Animal Production and Health Section.

Discussion

The TO summed up the meeting and outlined areas where there should be debate. Some conclusions could also be drawn. The following items should be considered by all participants and comments sent back to the TO in Vienna.

- There were differences in diagnostic sensitivities of the assays, as illustrated by differing results with serum from animals early after infection or late after infection.
- The diagnostic specificity of each of the tests was similar.
- There were some difficulties with the Indirect ELISAs not being efficient at picking up certain species of sera e.g. buffalo sera in Philippines, and giraffe sera in S. Africa
- The test from Denmark required a truly competitive format to achieve higher diagnostic sensitivity. A revised protocol was given.
- Differences in vaccine formulation affect results in cattle as to whether antibodies against non-structural proteins are produced. This could be a problem in assessing results where unlicensed vaccines are used.
- The ELISA devised in PANAFTOSA should be included in some laboratories for parallel testing.
- An estimation of the relative analytical sensitivity of each assay should be made. A method is outlined below.
- Immuno-blotting techniques have a role in surveillance in certain situations.
- The costs of "kits" should be addressed. It is vital that the cost element be identified early so that users can assess needs and cost these for future use in control programmes.
- The exact contents of a kit should be worked out and stated with protocols.
- Reference sera should be identified and volumes assessed for possible future use in reference panels for test comparison
- All information from the assays should be routed through the TO in Vienna and sent to all involved in the CRP.